

**REMARKS/ARGUMENTS**

This amendment is being submitted in response to the Office Action dated April 22, 2003. Claims 26-30 have been withdrawn without prejudice. Claims 31-51 have been added by this Amendment. Claims 1-25 and 31-51 are presented for examination. Claims 1-25 have been amended to correct typographical errors and provide clarity, but not for reasons of patentability under 35 U.S.C. §102 or §103. Applicants respectfully request consideration of claims 1-25 and 31-51 in light of the amendments and remarks made herein. Applicants authorize the Examiner to charge any payment necessary to maintain the application in good standing, to Deposit Account 03-0172, including a \$205.00 payment to cover the fee for a two month extension of time under 37 C.F.R. §1.17(a)(1).

**Restriction Requirement**

Applicants affirm the provisional election without traverse to prosecute the invention of Group I, claims 1-25 and 28-30. Applicants reserve the right to prosecute the inventions of Groups II and III, in related applications, such as divisional applications.

**Information Disclosure Statement**

The Examiner has requested a copy of the book "International Seed Testing Association Seed Vigour Testing Handbook" (1987). A copy of that reference is provided with this Response.

**Compact Disc Submission**

The Examiner has required that the Applicants provide a Compact Disc Submission in accordance with 37 C.F.R. 1.96(c). Applicants have amended the specification accordingly, and provided the two identical Compact Discs with this Response.

**Drawings**

The Examiner has indicated that color drawings, specifically Figure 9 in the present application, are acceptable for examination purposes only unless a petition under 37 C.F.R. 1.84(a)(2) is filed and granted permitting their use as acceptable drawings. Applicants appreciate the Examiner's indication that the drawings may be used for examination purposes, and

Applicants will provide a substitute drawing page containing an acceptable formal drawing of Figure 9 upon an indication of allowable claims.

The Examiner has objected to the drawings as failing to comply with 37 CFR 1.84(p)(5). Although the Examiner indicates that reference signs 98, 100 and 110 are mentioned in the description of Figure 4, Applicants respectfully fail to find such a passage in the present application. Accordingly, Applicants request clarification as to the page and line numbers at which reference signs 98, 100 and 110 are described as being shown in Figure 4.

Applicants note that at page 10, line 18, the application states that “Figures 4-8 show an inverted scanner...” Reference signs 98, 100 and 110 are mentioned several times at pages 11 and 12 with reference to the set of Figures 4-8. In the drawings, reference sign 98 is shown in Figures 6 and 8; reference sign 100 is shown in Figures 7A, 7B and 8; and reference sign 110 is shown in Figures 5A, 5B, 7A and 7B. In the understandable event that the Examiner misread page 10, line 18, to reference only Figure 4, Applicants submit that the drawings as filed are acceptable and require no correction.

#### Claim Objections under 37 C.F.R. 1.75(a)

Claims 20-22 stand objected to on the basis that the limitation “a hypocotyl/radicle separation point” is unclear. Accordingly, Applicants have amended claims 20-22 to adopt the Examiner’s suggested language “a separation point between the hypocotyl and the radicle.”

Claim 28 stands objected to on the basis that the limitations “said step of germinating” and “the shallow container” lack antecedent basis. Applicants have withdrawn claim 28 without prejudice rendering the objection moot.

#### 35 U.S.C. § 112

Claims 1-25 and 28-30 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicants have amended claims 1-25 to claim the invention in a manner consistent with the original disclosure. Specifically, Applicants have amended the claims to reflect that the method relates to analyzing each seedling of a plurality of seedlings.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 1-25 under 35 U.S.C. § 112.

35 U.S.C. § 102

Claims 1, 3, 5-6 and 29-30 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,864,984 (McNertney). 35 U.S.C. §102(b) states:

“A person shall be entitled to a patent unless ...  
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States...”

According to M.P.E.P. §2131:

“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegall Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

Applicants respectfully submit that McNertney fails to disclose all of the elements of claims 1, 3, 5 and 6 of the present application. The rejection is moot with regard to claims 29 and 30 which have been withdrawn without prejudice.

Specifically, with respect to Applicants' independent claim 1, McNertney fails to disclose several elements claimed by Applicants. With reference to claim 1 as amended, McNertney fails to disclose “identifying each of the plurality of seedlings in the captured digital image” as claimed and disclosed by the present application. In contrast, McNertney identifies a region of interest (“ROI”) which is a section of a grid in which a seedling is expected to be found. This is a significant distinction between the references. By identifying a ROI instead of a discrete seedling, the invention of McNertney is prone to erroneous measurements, specifically in the event that all or part of the root of the seedling extends outside of the identified ROI. In such an event, the invention of McNertney would erroneously determine the size of the root to be shorter than it actually is. By identifying the seedling itself in the captured digital image, without limiting the identification to a ROI, the present invention overcomes the shortcoming of McNertney and provides more accurate results.

McNertney further fails to disclose “determining a primary path of each of the plurality of seedlings.” The invention of McNertney describes capturing a digital image of the seedlings from an overhead perspective, where the seedlings lie on a horizontally disposed blotter paper. This configuration is best illustrated in Figures 1, 2 and 2A and by McNertney’s description at column 5, lines 24-27:

“Referring to FIG. 1, an imaging device, preferably a camera 10 is positioned above the top of an environmentally controlled growth chamber 11, so that it can obtain a captured image of one germination box 12 at a time.” (emphasis provided)

As a consequence, the invention of McNertney causes the seedlings shoots to grow upward, toward the camera, and the roots to grow outward, along a plane perpendicular to the camera. In essence, the invention of McNertney causes the seedlings to grow at a generally right angle, arguably causing the seedlings to have no primary path. More specifically, McNertney determines the root path, not the primary path, of each seedling.

This is most clearly understood by considering a seed with a long shoot and a short root, the shoot and root defining a roughly 90 degree angle. In such a circumstance, assuming that a “primary path” could be said to exist at all, the primary path would be the path of the shoot since it is the longest portion of the seedling. Using the invention of McNertney, however, such a primary path would not be identified. Only the path of the root is detected by McNertney.

Still further, McNertney fails to disclose “determining a seed vigor index based on the value determined from the primary path...” as disclosed and claimed in the present application. Applicants respectfully contend that rather than being a “seed vigor index” as that term is used by those of ordinary skill, McNertney’s seedlot vigor index is more accurately described as a “root vigor index” since only data regarding the roots of seedlings is captured and analyzed.

Applicants find no disclosure by McNertney of the above-referenced elements of independent claim 1. Consequently, Applicants respectfully request the Examiner reconsider and withdraw the rejection of claim 1 under 35 U.S.C. § 102. Applicants further request the Examiner reconsider and withdraw the rejection of dependent claims 3, 5 and 6 under 35 U.S.C. § 102 as being allowable for the same reasons as independent claim 1 from which they depend.

35 U.S.C. § 103

Claim 28 stands rejected under 35 U.S.C. § 103 as being anticipated by McNertney in view of McCormac et al. Applicants believe that this rejection is rendered moot by the withdrawal of claim 28 without prejudice.

Newly Added Claims

Applicants note that original claim 4 was subject to a rejection under 35 U.S.C. § 112 and depended from a claim rejected under 35 U.S.C. § 102. Applicants have added independent claims 31-35 and 48 which recites the subject matter of original claim 4, 7-10 and 23, respectively, in a form that addresses and overcomes the Examiner's rejection under 35 U.S.C. § 112. Accordingly, Applicants request that the Examiner reconsider and allow independent claims 31-35 and 48.

Applicants have further added dependent claims 36-47 and 49-50 which recite the subject matter of original claims 11-22 and 24-25, respectively in a form that addresses and overcomes the Examiner's rejection of those claims under 35 U.S.C. § 112, and depend from one of newly added claim 31-38 and 48. Accordingly, Applicants request that the Examiner reconsider and allow claims 36-47 and 49-50. Applicants have further added independent claim 51, which Applicants believe to be allowable.

Conclusion

Entry of this amendment and allowance of claims 1-25 and 31-51 are respectfully requested. Applicants respectfully invite the Examiner to contact Applicants' representative at the telephone number listed below to discuss any questions regarding the present application or this amendment.

Respectfully submitted,

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Date



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